

FORM PTO-1390
(REV. 5-93)

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER
67190/988533

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371**

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

69/743522

INTERNATIONAL APPLICATION NO.
PCT/DE99/00916

INTERNATIONAL FILING DATE
(19.03.99)
19 March 1999

PRIORITY DATES CLAIMED
(23.03.98)
23 March 1998

TITLE OF INVENTION

DRIVE UNIT FOR SWITCHING CIRCUIT BREAKERS ON AND OFF

APPLICANT(S) FOR DO/EO/US

DOBRAWA, Andreas and VOLKMAR, Ralf-Reiner

Applicants herewith submit to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
 2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
 3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) immediately rather than delay applicable time limit set in 35 U.S.C. examination until the expiration of the 371(b) and PCT Articles 22 and 39(1).
 4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
 5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
 6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
 7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
 8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
 9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
 10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).
- Items 11. to 16. below concern other document(s) or information included:**
11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
 12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
 13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
 14. ☐ A substitute specification and marked-up specification.
 15. ☐ A change of power of attorney and/or address letter.
 16. ☒ Other items or information: Search Report, *PT/RO/ICI*

Express Mail No.: EL234412624US

U.S. APPLICATION NO. 09-1.743522-		INTERNATIONAL APPLICATION NO. PCT/DE99/00916		ATTORNEY'S DOCKET NUMBER 67190/988533	
17. <input checked="" type="checkbox"/> The following fees are submitted:				CALCULATIONS PTO USE ONLY	
Basic National Fee (37 CFR 1.492(a)(1)-(5)): Search Report has been prepared by the EPO or JPO \$860.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) ... \$690.00 No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$710.00 Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$1,000.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) \$100.00					
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$ 860	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$	
Claims	Number Filed	Number Extra	Rate		
Total Claims	5 - 20 =	0	X \$18.00	\$ 0	
Independent Claims	1 - 3 =	0	X \$80.00	\$ 0	
Multiple dependent claim(s) (if applicable)			+ \$270.00	\$	
TOTAL OF ABOVE CALCULATIONS =				\$ 860	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				\$	
SUBTOTAL =				\$ 860	
Processing fee of \$130.00 for furnishing the English translation later the <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				+	\$
TOTAL NATIONAL FEE =				\$ 860	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				+	\$
TOTAL FEES ENCLOSED =				\$ 860	
				Amount to be: refunded	\$
				charged	\$
a. <input type="checkbox"/> A check in the amount of \$ _____ to cover the above fees is enclosed.					
b. <input checked="" type="checkbox"/> Please charge my Deposit Account No. <u>11-0600</u> in the amount of \$860.00 to cover the above fees. A duplicate copy of this sheet is enclosed.					
c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to <u>11-0600</u> . A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) Deposit Account No. or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO:					
Kenyon & Kenyon One Broadway New York, New York 10004			Richard L. Mayer, Reg. No. 22,490 NAME		
			1/10/01		
			DATE		

09/743522

JC07 Rec'd PCT/PTO 08 JAN 2001

[67190/988533]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s) : Andreas DOBRAWA et al.
Serial No. : To Be Assigned
Filed : Herewith
For : DRIVE UNIT FOR SWITCHING CIRCUIT BREAKERS
ON AND OFF
Examiner : To Be Assigned
Art Unit : To Be Assigned

Assistant Commissioner
for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

SIR:

Kindly amend the above-identified application
before examination, as set forth below.

IN THE SPECIFICATION:

Please amend the specification as follows:

On page 1, delete line 1, and insert:

--FIELD OF THE INVENTION--.

On page 1, line 6, change ", having" to --. The
drive unit includes--.

On page 1, line 11, change ", and having" to --.
The drive unit further includes--.

On page 1, before line 15, insert:

--BACKGROUND INFORMATION--.

On page 1, delete line 15, and insert:

EL234412624US

German Patent No. 38 23 574 describes a drive unit of the type identified above.--.

On page 1, line 16, delete "German Patent 38 23 574 Cl.".

On page 1, line 28, change "known" to --conventional--.

On page 2, before line 8, insert:
--SUMMARY--.

On page 2, line 8, change "The" to --An--.

On page 2, line 16, after "by" insert --providing--
, after "the" insert --following--, and after "features" insert
--:--.

On page 2, delete lines 26-31, and insert:
--Equalizing capacitors, which are used in vacuum switches in
parallel to their breaker gaps to increase the d.c. currents to
be switched, are used for contact elements in a gaseous
atmosphere and also for air-insulated relay contacts. Despite--

On page 3, line 3, change "known" to --conventional--.

On page 3, line 8, change "known" to --conventional--.

On page 3, line 12, delete "the following feature
is provided:--.

On page 3, line 13, delete "2.1".

On page 3, line 18, change "Another" to --According
to another--, and change "is" to --,--.

On page 3, delete line 19.

On page 3, line 20, delete "3.1".

On page 3, line 27, change "Another" to --According to another--, and change "is" to --,--.

On page 3, delete line 28.

On page 3, line 29, delete "4.1".

On page 3, line 31, delete "4.2".

On page 3, line 33, after "board," insert --and--.

On page 3, line 34, delete "4.3".

On page 4, line 2, change "known" to --conventional--.

On page 4, delete lines 7-14, and insert:

--BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows a basic design for controlling a drive unit for a circuit breaker as a function of the direction of rotation, in accordance with the present invention.

Figure 2 shows basic wiring of a relay contact having an equalizing capacitor, according to the present invention.

Figure 3 shows the effect of the equalizing capacitors on the curve of the contact currents and contact voltages on opening the relay contact.

DETAILED DESCRIPTION--.

On page 4, line 32, change "RK" to --KR--.

On page 6, delete line 1, and insert:

--What Is Claimed Is--.

67190/988533
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : DOBRAWA et al.
International Application : PCT/DE99/00916
International Filing Date : 19 March 1999
Priority Date : 23 March 1998
For : DRIVE UNIT FOR SWITCHING CIRCUIT BREAKERS
ON AND OFF

Assistant Commissioner
For Patents
Washington, D.C. 20231

Attention: PCT Legal Department

**PETITION FOR REVIVAL OF AN APPLICATION FOR
PATENT ABANDONED UNINTENTIONALLY UNDER
37 CFR 1.137(b)**

SIR:

The above-identified application became abandoned for failure to enter the national phase. The abandonment date of this application is September 23, 2000.

1. The Petition fee of \$1240.00 is authorized to be charged to our Deposit Account No. 11-0600. This Petition is being filed in duplicate.
2. This petition is accompanied by a request to enter the national stage in the United States under 35 U.S.C. 371.

03/14/2001 UEDUVIJE 00000102 110600 09743522
04 FC:141 1240.00 CH

Express Mail No.: EL234412624US

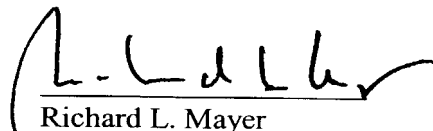
The following items are enclosed:

- a. Transmittal Letter to the U.S. Designated/Elected Office (Form PTO 1390) requesting entry in the U.S. national stage and the appropriate fee;
- b. English translation of International Application with drawings;
- c. Preliminary Amendment;
- d. Declaration & Power of Attorney;
- e. English translation of International Search Report;
- f. PCT/RO/101;
- g. Information Disclosure Statement and PTO-1449; and
- h. Assignment and Recordation Sheet..

The delay caused by the abandonment of the national phase application was unintentional.

Respectfully submitted,

Date: Jan 10, 2001


Richard L. Mayer
Reg. No. 22,490

KENYON & KENYON
One Broadway
New York, New York 10004
212 425-7200

IN THE ABSTRACT:

Please amend the abstract as follows:

Line 5, change ", having" to --. The drive unit includes--.

Line 10, change ", and" to --. The drive unit further includes--.

Line 11, delete "having".

Line 12, after "switching." insert --The all-or-nothing--.

Delete blank line 13.

Line 14, delete "The all-or-nothing".

Line 15, delete "(KL, KR)".

Line 17, delete "(RK)".

Line 18, delete "(AK)".

Delete line 19 and delete blank line 20.

Line 20, before "Such" insert --each.--.

Delete line 24.

IN THE CLAIMS:

Please cancel, without prejudice, claims 1-4.

Please add the following new claims:

5. (New) A drive unit for switching a circuit breaker on and off, comprising:

a reversible d.c. motor;

a switching device including two separately drivable and interlocked reversing switches, each of the reversing switches being assigned to a respective direction of rotation of the d.c. motor, contacts of the reversing switches performing a current reversal on windings of the d.c. motor as is necessary to reverse the direction of rotation of the d.c. motor;

power contactors, contacts of the power contactors having a switching capacity for load switching, the reversing switches and the power contacts assigned to each direction of rotation being formed by a respective low-power relay, each low-power relay including at least two electrically isolated relay contacts connectable in parallel; and

an equalizing capacitor connected in parallel to each of the relay contacts of each low-power relay.

6. (New) The drive unit according to claim 5, wherein the circuit breaker includes at least one of a disconnecting switch and a grounding switch of a medium-voltage switchgear.
7. (New) The drive unit according to claim 5, wherein the relay contacts are implemented by switch contacts that can be blown-out magnetically.
8. (New) The drive unit according to claim 5, wherein each equalizing capacitor is designed for a capacitance range corresponding to 10^2 to 10^5 times a value of a capacitance of the relay contacts in an open position.
9. (New) The drive unit according to claim 5, wherein the low-power relays are arranged with the equalizing capacitors on a common circuit board, moving parts of the relay contacts are connected to a voltage terminal of the circuit board, and fixed parts of the relay contacts are connected to a motor terminal of the circuit board as a function of direction of rotation.

Remarks

This Preliminary Amendment cancels, without prejudice, claims 1-4 in the underlying PCT application PCT/DE99/00916, and adds new claims 5-9. The new claims, inter alia, conform the claims to U.S. Patent and Trademark Office rules and do not add new matter to the application.

The above amendments to the specification and the abstract conform the specification and the abstract to U.S. Patent and Trademark Office rules, and do not introduce new matter into the application.

The underlying PCT application PCT/DE99/00916 includes an International Search Report, dated September 20, 1999. An English translation of the Search Report is provided herewith.

It is respectfully submitted that the subject matter of the present application is new, non-obvious, and useful. Prompt consideration and allowance of the application are respectfully requested.

Respectfully submitted,

Dated: 1/10/01

By:

R. L. Mayer
Richard L. Mayer
Reg. No. 22,490

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09/743522

2/PRTS

JC07 Rec'd PCT/PTO 08 JAN 2001

[67190/988533]

DRIVE UNIT FOR SWITCHING CIRCUIT BREAKERS ON AND OFF

Description

The present invention relates to a drive unit for switching circuit breakers on and off, in particular disconnecting switches and/or grounding switches of medium-voltage switchgear, having a reversible d.c. motor and a switching device containing two separately drivable and interlocked reversing switches, one assigned to each direction of rotation of the d.c. motor, their contacts performing the current reversal on the windings of the d.c. motor as is necessary to reverse the direction of rotation, and having power contactors whose contacts have the required switching capacity for load switching.

Drives of the type defined in the preamble are known from German Patent 38 23 574 C1. Within this drive unit, a power contactor is connected upstream from each of two reversing switches which switch without current and the contacts of the power contactor control the switching operations that are subject to load currents. The reversing switches which are not current carrying are provided here as circuit board components, whereas the power contactors with the contacts are not mounted on circuit boards because of their compactness but instead are mounted in a separate space, e.g., in centrally arranged switch boxes. The necessary electric connections between the current-carrying contacts of the power contactor and the non-current-carrying contacts of the reversing switches are created in a known way within the switchgear through appropriate cable harnesses for the individual installation.

Depending on the type and extent of the switchgear having a plurality of disconnecting switches and grounding switches

which are also equipped with a plurality of motor drives accordingly, there is a variety of different types of cable installations which must also be brought to the various wiring levels through multiple changes because of the differences in current-carrying capacity of the respective power contactors and reversing switches.

The object of the present invention is to greatly simplify the drive units of circuit breakers with respect to the electric connections of their functional components to one another and in particular to significantly restrict the various types of cable installations of the switchgear because of differences in current-carrying capacity of their different individual components, but without lowering the usual safety standard in this technology. This is achieved according to the present invention by the features

- 1.1. reversing switches and power contactors are each formed by a uniform low-power relay representing the direction of rotation,
- 1.2. the low-power relays each have at least two electrically isolated relay contacts that can be connected in parallel,
- 1.3. an equalizing capacitor is connected in parallel with each of the relay contacts of the low-power relays.

The present invention is based essentially on the finding derived from German Patent 44 47 391 C1, namely to effectively use equalizing capacitors, which are used in vacuum switches in parallel to their breaker gaps to increase the d.c. currents to be switched, for contact elements in a gaseous atmosphere, i.e., also air-insulated relay contacts. Despite the known different properties of these insulation media, it has surprisingly been found that even in the case of contact elements arranged in gas-insulated media, reliable extinction of the arc can be achieved in a short time when the contacts are opened due to the use of the equalizing capacitors. This permits the possibility of providing the reversing switches

and the power contactors in the form of a uniform low-power relay which can be driven as a function of the direction of rotation in a known manner. The low-power relays can thus also be used for safe switching of current-carrying circuits. This eliminates all additional measures with regard to cable installations within switchgear as required previously because of differences in the permissible current-carrying capacity. The known circuits can be produced with uniform low-power relays.

According to an advantageous embodiment of the present invention, the following feature is provided:

2.1. the relay contacts are implemented by switch contacts that can be blown out magnetically.

Prompt extinction of the arc on opening the relay contacts is also promoted with this essentially known effect.

Another advantageous embodiment of the present invention is provided by the feature:

3.1. the equalizing capacitors are each designed for a capacitance range corresponding to 10^2 to 10^5 times the value of the capacitance of the opened relay contacts. This capacitance range represents optimum efficiency of the equalizing capacitors with respect to prompt extinction of the arc.

Another advantageous embodiment of the present invention is achieved through the features:

4.1. the low-power relays are arranged with the equalizing capacitors on a common circuit board,
4.2. the moving parts of the respective relay contacts are connected to a voltage terminal of the respective circuit board,

4.3. the fixed parts of the respective relay contacts are connected to a motor terminal of the respective circuit board in each case as a function of the direction of rotation.

By jointly accommodating a plurality of low-power relays on a single circuit board, the known switching measures for controlling the drive units for a wide variety of switchgear can be implemented in a small amount of space and with the various types of cable harness greatly reduced.

The present invention is illustrated in further detail by three figures. Figure 1 shows the basic design for controlling a drive unit for a circuit breaker as a function of the direction of rotation; Figure 2 shows the basic wiring of a relay contact having an equalizing capacitor; and Figure 3 shows the effect of the equalizing capacitors on the curve of the contact currents and contact voltages on opening the relay contact.

Figure 1 shows low-power relay KL for counterclockwise rotation and low-power relay KR for clockwise rotation, establishing the required circuits between voltage terminal SA of total current US and motor terminal MA with their respective relay contacts RK through current paths on common circuit board LP. It can also be seen that two relay contacts RK of the low-power relay KL for counterclockwise rotation, which are operated in parallel, and two relay contacts RK of the low-power relay KR for clockwise rotation, which are also operated in parallel and are designated in the same way, are each connected in parallel through an equalizing capacitor AK. The non-moving parts of the relay contacts RK of the low-power relay KL for counterclockwise rotation are switched so that total directional voltage US at voltage terminal SA is reversed at motor terminal MA, in contrast with the corresponding non-moving parts of relay contacts RK of low-power relay RK for clockwise rotation. Due to the reversal of total voltage US at motor terminal MA, the direction of rotation of the d.c. motor (not shown) is reversed from clockwise rotation to counterclockwise rotation. Low-power relays KL, KR which can be driven separately are interlocked, i.e., the other low-power relay KL or KR can be driven only

when the previously driven low-power relay KR or KL is in a defined starting position.

Figure 2 illustrates the basic wiring of relay contact RK with equalizing capacitor AK connected in parallel with it. As soon as relay contact RK is effectively closed, phase current IP flows through motor resistor MR, in which case the direction of the effective phase current determines the direction of rotation of the d.c. motor at the same time. It is indicated here that contact voltage UK is established at relay contact RK and motor voltage UM is established at motor resistor MR, the value corresponding to total voltage US at voltage terminal SA.

Figure 3 shows the curve of contact voltage UK and the curve of contact current IK as a function of time t, with the first time t1 indicating the contact voltage curve which was previously customary after reaching arc voltage UL, and phase current IP after opening relay contact RK, while the second time t2 shows in a simplified representation the curves of the same parameters with equalizing capacitor AK connected in parallel to relay contact RK. These altered curves show that both overswing of contact voltage UK and an increase as well as additional loading overswing processes in the case of contact current IK are largely prevented with the equalizing capacitors connected in parallel even in gaseous media.

Patent Claims

1. A drive unit for switching circuit breakers on and off, in particular disconnecting switches and/or grounding switches of medium-voltage switchgear, having a reversible d.c. motor and a switching device containing two separately drivable and interlocked reversing switches, one assigned to each direction of rotation of the d.c. motor, their contacts performing the current reversal on the windings of the d.c. motor as is necessary to reverse the direction of rotation, and having power contactors whose contacts have the required switching capacity for load switching, characterized by the features:

- 1.1. reversing switches and power contactors are each formed by uniform low-power relays (KL, KR) representing the direction of rotation,
- 1.2. the low-power relays (KL, KR) each have at least two electrically isolated relay contacts (RK) that can be connected in parallel,
- 1.3. an equalizing capacitor (AK) is connected in parallel with each of the relay contacts (RK) of the low-power relays (KL, KR).

2. The drive unit for switching circuit breakers on and off according to Patent Claim 1, characterized by the feature:

- 2.1. the relay contacts (RK) are implemented by switch contacts that can be blown out magnetically.

3. The drive unit for switching circuit breakers on and off according to Patent Claim 1, characterized by the feature:

- 3.1. the equalizing capacitors (AK) are each designed for a capacitance range corresponding to 10^2 to 10^5 times the value of the capacitance of the opened relay contacts (RK).

4.1. the low-power relays (RK) are arranged with the equalizing capacitors (AK) on a common circuit board (LP),

4.2. the moving parts of the respective relay contacts (RK) are connected to a voltage terminal (SA) of the respective circuit board (LP),

NY01 318456 v 2

Abstract

5 A drive unit is described for switching circuit breakers on
and off, in particular disconnecting switches and/or grounding
switches of medium-voltage switchgear, having a reversible
d.c. motor and a switching device containing two separately
drivable and interlocked reversing switches, one assigned to
each direction of rotation of the d.c. motor, their contacts
performing the current reversal on the windings of the d.c.
10 motor as required to reverse the direction of rotation, and
having power contactors whose contacts have the required
switching capacity for load switching.

15 The all-or-nothing relays and safety switches are implemented
by uniform low-power relays (KL, KR) representing the
direction of rotation, each having at least two electrically
isolated relay contacts (RK) connected in parallel and also
having an equalizing capacitor (AK) connected in parallel to
each.

20 Such drive units are used in connection with switchgear for
power transmission and distribution.

Figure 1

1/2

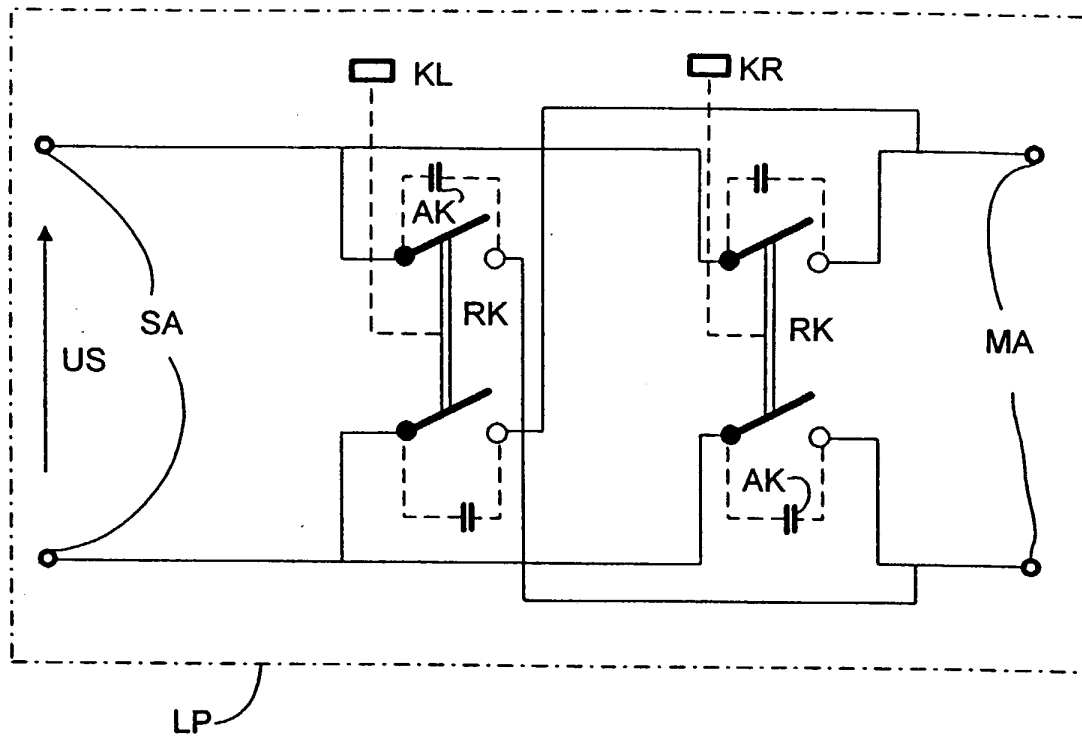


FIG 1

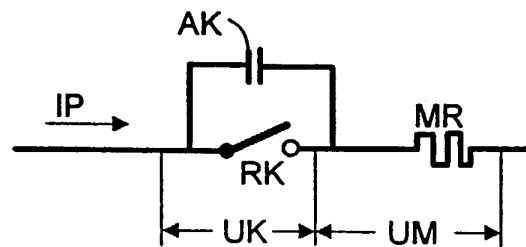


FIG 2

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2/2

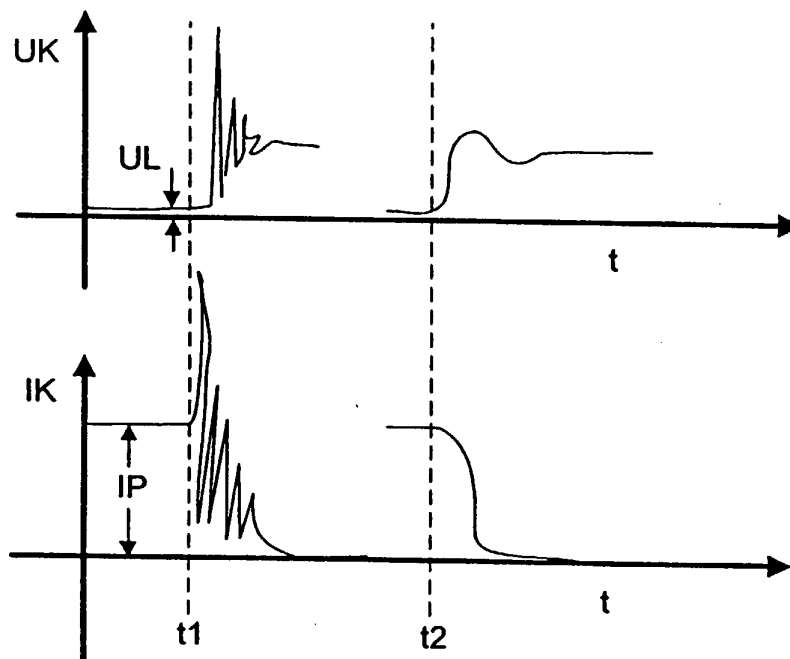


FIG 3

[67190/988533]

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **DRIVE UNIT FOR SWITCHING CIRCUIT BREAKERS ON AND OFF**, for which an application for Letters Patent was filed as PCT Application No. **PCT/DE99/00916** on **March 19, 1999**.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN APPLICATION(S)

Number	Country	Day/month/year filed	Priority Claimed Under 35 USC §119
198 13 810.5	Fed. Rep. of Germany	23 March 1998	YES

EL 234412624US

3

And I hereby appoint Richard L. Mayer (Reg. No. 22,490), Gerard A. Messina (Reg. No. 35,952), and Michelle M. Carniaux (Reg. No. 36,098) my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

Please address all communications regarding this application to:

KENYON & KENYON
One Broadway
New York, New York 10004

Please direct all telephone calls to Richard L. Mayer at (212) 425-7200.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful and false statements may jeopardize the validity of the application or any patent issued thereon.

Inventor: Andreas DOBRAWA

Inventor's Signature:

Date: 06.01.2000

Residence: Walsroder Str. 11
12169 Berlin *Def*
Federal Republic of Germany

Citizenship: Federal Republic of Germany

Post Office Address: Same as above.

Inventor: Ralf-Reiner VOLKMAR

Inventor's Signature:

Date: 31.10.2000

Residence: Triftstr. 39
13353 Berlin *Def*
Federal Republic of Germany

Citizenship: Federal Republic of Germany

Post Office Address: Same as above.

319458